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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/541,987	07/11/2005	Dolf Henricus Jozef Van Casteren	NL 030036	7997
24737	7590	10/17/2007		
PHILIPS INTELLECTUAL PROPERTY & STANDARDS			EXAMINER	
P.O. BOX 3001			TRAN, THUY V	
BRIARCLIFF MANOR, NY 10510				
			ART UNIT	PAPER NUMBER
			2821	
			MAIL DATE	DELIVERY MODE
			10/17/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/541,987

Applicant(s)

VAN CASTEREN ET AL.

Examiner

Thuy V. Tran

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on RCE & amendment conc. filed on 09/27/07.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-41 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 9, 11 and 20-41 is/are allowed.
- 6) ☒ Claim(s) 1-8, 10 and 12-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 September 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

This Office Action is in response to the Applicants' Request for Continued Examination (RCE) filed on 09/27/2007 and amendment concurrently filed therewith. In virtue of this amendment, claims 19-41 are newly added; and thus, claims 1-41 are now presented in the instant application.

#### ***Request for Continued Examination Entry***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicants' submission filed on 09/27/2007 has been entered.

#### ***Drawings***

2. The "Replacement Sheets" of drawings submitted on 09/27/2007 are accepted.

#### ***Abstract Objection***

3. The amended abstract of the disclosure submitted on 03/15/2007 remains objected to because it is mis-descriptive.

In light of the submitted specification, the circuit of the claimed invention comprises a transformer, a switch, and a diode connected in parallel with a primary winding of the transformer. Citing only a transformer as an element or a part of the circuit in the first three sentences is not appropriate.

Following is one way of correction that has been suggested:

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Line 3, “. ” should be changed to --,--; “A” should be changed to --a--; and “is” should be deleted; and

Line 6, “. ” should be changed to --,--; “A” should be changed to --and a--; and “is” should be deleted.

Correction is required. See MPEP § 608.01(b).

***Claim Objections/ Minor Informalities***

4. Claim 8 is objected to because of the following informalities:

Claim 8, lines 4-8, “high-intensity” should be changed to --gaseous-- (for terminology consistency).

Appropriate correction is required.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 1-8, 10, and 12-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uchida (U.S. Patent No. 6,272,024 B2).

With respect to claims 1 and 19, Uchida discloses, in Figs. 1-3, a circuit for providing power to a load [14] with a predetermined specification comprising (1) a transformer [2] having

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a primary winding [8] and a secondary winding [9]; said secondary winding [9] being part of a resonant circuit [9, 11], (2) first and second connection nodes [12, 13] for coupling of the load [14] in series to the secondary winding [9], (3) a switch [3] coupled in series to the primary winding [8], an on-time and an off-time of the switch [3] being controllable by a control element [5], for generating a voltage pulse (see Fig. 2; col. 4, lines 15-16) over the primary winding [8], and (4) a diode [16] (see Fig. 1) coupled in series with a surge suppressor [17, 18] and both coupled in parallel to the primary winding [8] for absorbing the surges developed across the primary winding [8] of the transformer (see col. 4, lines 52-59) and for forward biased by the voltage developed in the primary winding [8] of the transformer [2] when the switch [3] is turned off (see col. 4, lines 30-32) and thus resulting in demagnetizing the transformer during the off-time of the switch [3], the on-time and the off-time of the switch [3] being predetermined (which is at a rate required for holding the converter output voltage constant; see col. 4, lines 15-16).

Uchida does not disclose that (i) the load is a gaseous discharge lamp which comprises a high-intensity discharge lamp, and (ii) the diode [16] is directly coupled in parallel to the primary winding [8] of the transformer [2] (which means that there is no such arrangement of the surge suppressor [17, 18]). These differences, however, are not of patentable merits since (i) it is believed that the circuit of Fig. 1 disclosed by Uchida is capable of working properly without the surge suppressor [17, 18], or in other words, the surge suppressor [17, 18] and its function of absorbing the surges that develop across the transformer primary winding [8] can be omitted if not desired, and (ii) the load can be a gaseous high-intensity discharge lamp load, which has been commonly operated by a flyback transformer (*see prior art of record to Daspit; U.S. Patent No. 4,441,053; see Fig. 7 and Abstract, lines 1-4*). Consequently, it would have been obvious to one

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of ordinary skill in the art at the time of the invention to employ a gaseous discharge lamp as the load and to eliminate the surge suppressor [17, 18] and its function distributed to the transformer in the circuit of Uchida upon a desirability or expectation for achieving a particular end or result in a given circumstance.

With respect to claim 2, Uchida discloses, in Fig. 1, a capacitor [11] is added in parallel to the secondary winding [9] for adjusting the resonance period of the resonant circuit [9, 11].

With respect to claim 3, Uchida obviously discloses all of the claimed subject matter, as expressly recited in claim 1, except that the transformer has a couple factor smaller than 1.

However, this difference is not of patentable merit since it has been commonly known in the art that the worse the coupling factor, the higher the necessary quality factor  $Q$  (*see Prior Art of Record to Jansen, U.S. Patent No. 5,608,613; col. 4, lines 66-67 and col. 5, lines 1-2*).

Accordingly, to perform a coupling factor of smaller than 1 for the windings [8, 9] of the transformer of Uchida to improve the high quality factor  $Q$  of the circuit of Uchida would have been deemed obvious to a person skilled in the art.

With respect to claim 4, Uchida discloses that the control element [5] is selected to cause the on-time of the switch to be at least half of a resonance frequency of the resonance circuit (see col. 5, lines 17-32).

With respect to claim 5, Uchida discloses that the control element [5] is selected to cause the off-time of the switch to be sufficient to reduce a current in the diode [16] to substantially zero (at time from  $t_1$  to  $t_2$ ; see Fig. 3) during demagnetization of the transformer (see col. 5, lines 33-52).

With respect to claim 6, Uchida discloses that the circuit is characterized in that a resistor [18] is connected in series to the diode [16] (see Fig. 1) to reduce the off- time.

With respect to claim 7, Uchida discloses, in Figs. 1-3, a circuit and a corresponding method for providing power to a load [14] comprising the steps of (1) applying a number of voltage pulses (see Fig. 2) to a primary winding [8] (see Fig. 1) of a transformer [2] so as to produce each time a high-voltage pulse (see Fig. 2) on a secondary winding [9] of the transformer, wherein the high voltage pulse is shaped by transformer inductances (of windings [8, 9]; see Fig. 1) and capacitances (of capacitor [11]; see Fig. 1) at a secondary side to create a load pulse, (2) applying the load pulse to the load [14], and (3) providing, between every application of a voltage pulse, a current path through a diode [16] coupled in series with a surge suppressor [17, 18] and both coupled in parallel to the primary winding [8] for absorbing the surges developed across the primary winding [8] of the transformer (see col. 4, lines 52-59) and for forward biased by the voltage developed in the primary winding [8] of the transformer [2] when the switch [3] is turned off (see col. 4, lines 30-32) and thus resulting in demagnetizing the transformer and preventing saturation of the transformer. Uchida does not disclose that (i) the load is a gaseous discharge lamp, and (ii) the diode [16] is directly coupled in parallel to the primary winding [8] of the transformer [2] (which means that there is no such arrangement of the surge suppressor [17, 18]). These differences, however, are not of patentable merits since (i) it is believed that the circuit of Fig. 1 disclosed by Uchida is capable of working properly without the surge suppressor [17, 18], or in other words, the surge suppressor [17, 18] and its function of absorbing the surges that develop across the transformer primary winding [8] can be omitted if not desired, and (ii) the load can be a gaseous discharge lamp load, which has been commonly

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operated by a flyback transformer (*see prior art of record to Daspit; U.S. Patent No. 4,441,053; see Fig. 7 and Abstract, lines 1-4*). Consequently, it would have been obvious to one of ordinary skill in the art at the time of the invention to employ a lamp as the load and to eliminate the surge suppressor [17, 18] and its function distributed to the transformer in the circuit of Uchida upon a desirability or expectation for achieving a particular end or result in a given circumstance.

With respect to claim 8, Uchida obviously discloses all of the claimed subject matter, as expressly recited in claim 7, except for an explicit teaching that a first series of pulses is applied to ignite the lamp, and a second series of pulses is applied to operate the lamp during the electrode heating phase of said lamp. This difference, however, is not of patentable merit since the circuit of Uchida including the switching circuit and the transformer is operable to perform such functions (see Figs. 2-3) and to hold the output voltage constant (see col. 4, lines 14-16). For these advantages, to operate the lamp with the circuit of Uchida by applying a first series of pulses to ignite the lamp, and a second series of pulses to operate the lamp during the electrode heating phase of said lamp would have been deemed obvious to a person skilled in the art.

With respect to claim 10, Uchida discloses that the off-time of the switch is chosen to be higher than a time necessary to reduce a current through the diode [16] to substantially zero (at time from t1 to t2; see Fig. 3; col. 5, lines 33-52).

With respect to claim 12, Uchida discloses, in Figs. 1-3, a circuit for providing power to a load [14] comprising (1) a transformer [2] having a primary winding [8] and a secondary winding [9]; the load [14] being connected to the secondary winding [9], (2) a switch [3] coupled to the primary winding [8], an on-time and an off-time of the switch [3] being controllable by a control element [5], for generating a voltage pulse (see Fig. 2; col. 4, lines 15-16) over the



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primary winding [8], and (3) a diode [16] (see Fig. 1) coupled in series with a surge suppressor [17, 18] and both coupled in parallel to the primary winding [8] for absorbing the surges developed across the primary winding [8] of the transformer (see col. 4, lines 52-59) and for forward biased by the voltage developed in the primary winding [8] of the transformer [2] when the switch [3] is turned off (see col. 4, lines 30-32) and thus resulting in demagnetizing the transformer during the off-time of the switch [3]. Uchida does not disclose that (i) the load is a gaseous discharge lamp, and (ii) the diode [16] is directly coupled in parallel to the primary winding [8] of the transformer [2] (which means that there is no such arrangement of the surge suppressor [17, 18]). These differences, however, are not of patentable merits since (i) it is believed that the circuit of Fig. 1 disclosed by Uchida is capable of working properly without the surge suppressor [17, 18], or in other words, the surge suppressor [17, 18] and its function of absorbing the surges that develop across the transformer primary winding [8] can be omitted if not desired, and (ii) the load can be a gaseous discharge lamp load, which has been commonly operated by a flyback transformer (*see prior art of record to Daspit; U.S. Patent No. 4,441,053; see Fig. 7 and Abstract, lines 1-4*). Consequently, it would have been obvious to one of ordinary skill in the art at the time of the invention to employ a gaseous discharge lamp as the load and to eliminate the surge suppressor [17, 18] and its function distributed to the transformer in the circuit of Uchida upon a desirability or expectation for achieving a particular end or result in a given circumstance.

With respect to claim 13, Uchida discloses, in Fig. 1, that the circuit further comprises a capacitor [11] which is connected in parallel to the secondary winding [9] for adjusting the resonance period of a resonant circuit [9, 11] associated with the secondary winding [9].

With respect to claim 14, Uchida obviously discloses all of the claimed subject matter, as expressly recited in claim 12, except that the transformer has a couple factor smaller than 1. However, this difference is not of patentable merit since it has been commonly known in the art that the worse the coupling factor, the higher the necessary quality factor  $Q$  (*see Prior Art of Record to Jansen, U.S. Patent No. 5,608,613; col. 4, lines 66-67 and col. 5, lines 1-2*). Accordingly, to perform a coupling factor of smaller than 1 for the windings [8, 9] of the transformer of Uchida to improve the high quality factor  $Q$  of the circuit of Uchida would have been deemed obvious to a person skilled in the art.

With respect to claim 15, Uchida discloses that the control element [5] is selected to cause the on-time of the switch to be at least half of a resonance frequency of the resonance circuit (see col. 5, lines 17-32) associated with the secondary winding [9].

With respect to claim 16, Uchida discloses that the control element [5] is selected to cause the off-time of the switch to be sufficient to reduce a current in the diode [16] to substantially zero (at time from  $t_1$  to  $t_2$ ; see Fig. 3) during demagnetization of the transformer (see col. 5, lines 33-52).

With respect to claim 17, Uchida discloses that the circuit is characterized in that a resistor [18] is connected in series to the diode [16] (see Fig. 1) to reduce the off- time.

With respect to claim 18, Uchida discloses that the control element [5] is configured to control the switch to provide a voltage pulse to the primary winding [8] only if a free-running current through the diode [ $I_d$ ] is substantially zero (see Figs. 2 and 3).

#### ***Allowable Subject Matter***

7. Claims 9, 11, and 20-41 are allowed.

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8. The following is a statement of reasons for the indication of allowable subject matter:

Prior art fails to disclose or fairly suggest:

- A circuit for providing a load with a predetermined specification comprising means for determining a maximum oscillation period of the resonant circuit based on a maximum value of a capacitance at a secondary side of the transformer when the load is connected, in combination with the remaining claimed limitations as called for in independent claim 9 (claims 20-26 are allowed since they are dependent on claim 9);
- A circuit for providing a load with a predetermined specification comprising means for calculating a mean value of a short-circuit current over the on-time and the off-time of the switch for a range of couple factors, in combination with the remaining claimed limitations as called for in independent claim 11 (claims 27-33 are allowed since they are dependent on claim 11);
- A circuit for providing power to a gaseous discharge lamp with a predetermined specification wherein the off-time of the switch is selected so that oscillation which starts when the switch is closed is not interrupted when the switch is opened, and continues until the transformer is at least partly demagnetized, thereby avoiding need for feedback to control operation of the switch, in combination with the remaining claimed limitations as called for in independent claim 34 (claims 35-37 are allowed since they are dependent on claim 34); and
- A method for providing power to a gaseous discharge lamp with a predetermined specification comprising setting the off-time so that oscillation which starts when the switch is closed to provide the on-time, is not interrupted when the switch is opened,

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and continues until the transformer is at least partly demagnetized, thereby avoiding need for feedback to control operation of the switch, in combination with the remaining claimed limitations as called for in independent claim 38 (claims 39-41 are allowed since they are dependent on claim 38).

***Citation of relevant prior art***

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Prior art Song et al. (U.S. Patent No. 5,457,416) discloses a Q-switching device circuit;

Prior art Daspt (U.S. Patent No. 4,441,053) discloses a switched mode ballast circuit;

and

Prior art Loberg (U.S. Patent No. 4,052,623) discloses an isolated semiconductor gate control circuit.

***Remarks and conclusion***

10. Applicants' arguments on the rejections of claims 1-8, 10, and 12-18 with respect to the teaching of the cited prior art to Uchida at pages 23-24 have been fully considered but they are not persuasive.

In response to the Applicants' arguments on the configuration of the diode with respect to the primary winding of the transformer at pages 23-24, it is agreed that the cited reference to Uchida does not explicitly teach or suggest that the diode [16] be directly coupled in parallel to the primary winding [8] of the transformer [2] so as to demagnetize the transformer [2] during the off-time of the switch [3]. This difference, however, is not of patentable merits since it is believed that the circuit of Fig. 1 disclosed by Uchida is capable of working properly without the

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surge suppressor [17, 18], or in other words, the surge suppressor [17, 18] and its function of absorbing the surges that develop across the transformer primary winding [8] can be omitted if not desired. It is further believed that such parallel connection of the diode with respect to the primary winding of the transformer would prevent the switch [3] from being damaged due to an electromotive force generated by the transformer [2]. As such, to eliminate the surge suppressor [17, 18] and its function distributed to the transformer in the circuit of the Uchida upon a desirability or expectation for achieving a particular end or result in a given circumstance would have been deemed obvious to a person skilled in the art of power electronics.

For the aforementioned,

- Claims 1-8, 10, and 12-19 are now rejected as being unpatentable over the teaching of Uchida (see details above); and
- Claims 9, 11, and 20-41 are allowed.

### *Inquiry*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thuy V. Tran whose telephone number is (571) 272-1828. The examiner can normally be reached on M-F (8:00 AM -4:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Owens Douglas can be reached on (571) 272-1662. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

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applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

10/14/2007

A handwritten signature in black ink, appearing to read 'Thuy V. Tran', with a stylized, cursive script.

**THUY V. TRAN**  
**PRIMARY EXAMINER**